Screening for TB in HIV Settings

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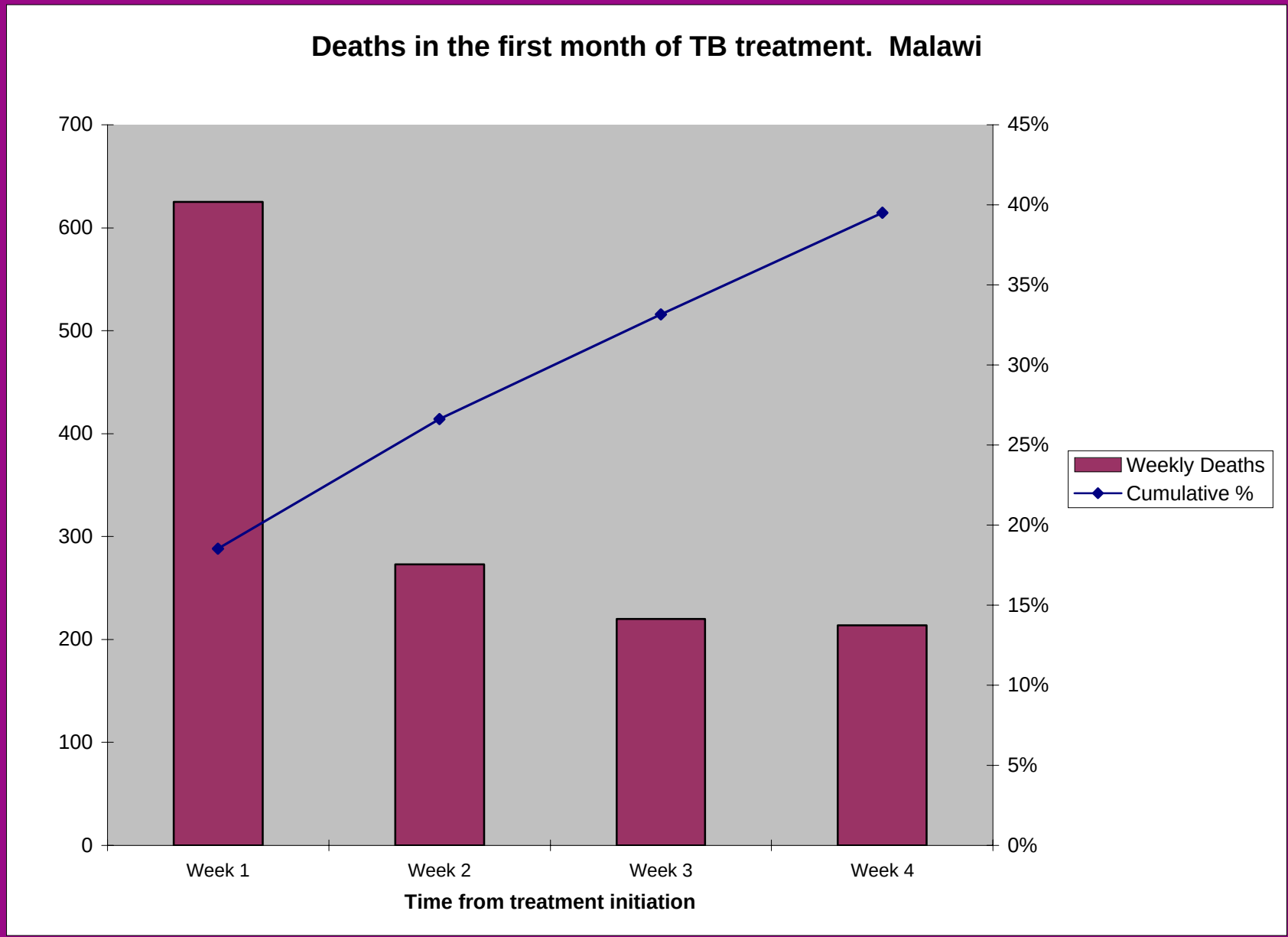
Q of C Meeting

February 2006

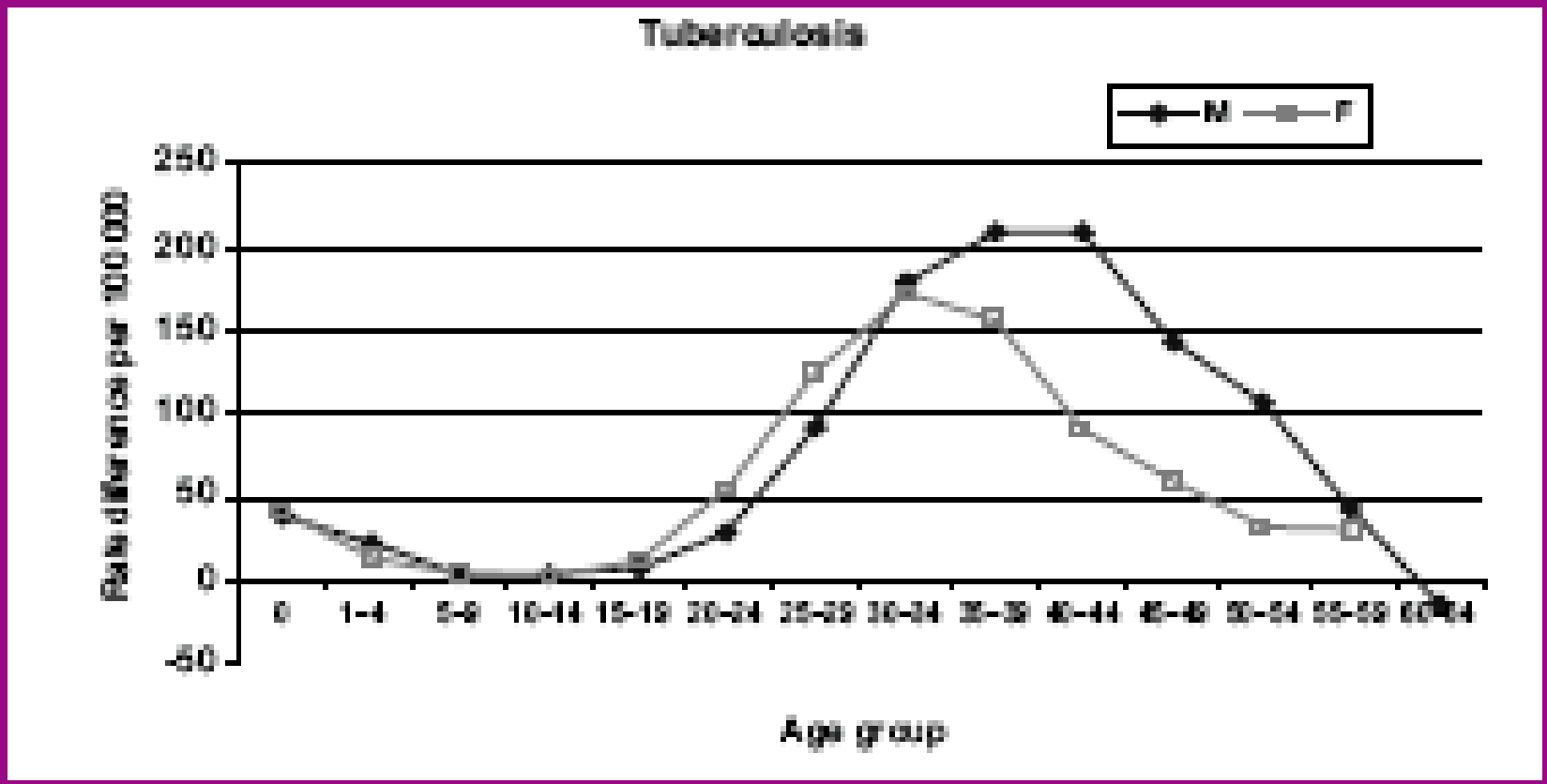
Low points of 2005: WHO Global TB Report

- 8.8 million new TB cases in 2003
  - 98% in developing countries
- >10% increase since 1997
- Increasing in Africa and E. Europe
  - Fueled by HIV and health system collapse
- 1.8 million deaths
  - Leading cause of death in people with HIV
- DOTS programs detect 42% of cases



Harries et al Int J TB Lung Dis

Differences in TB death rates: South Africa 1996-2001/2



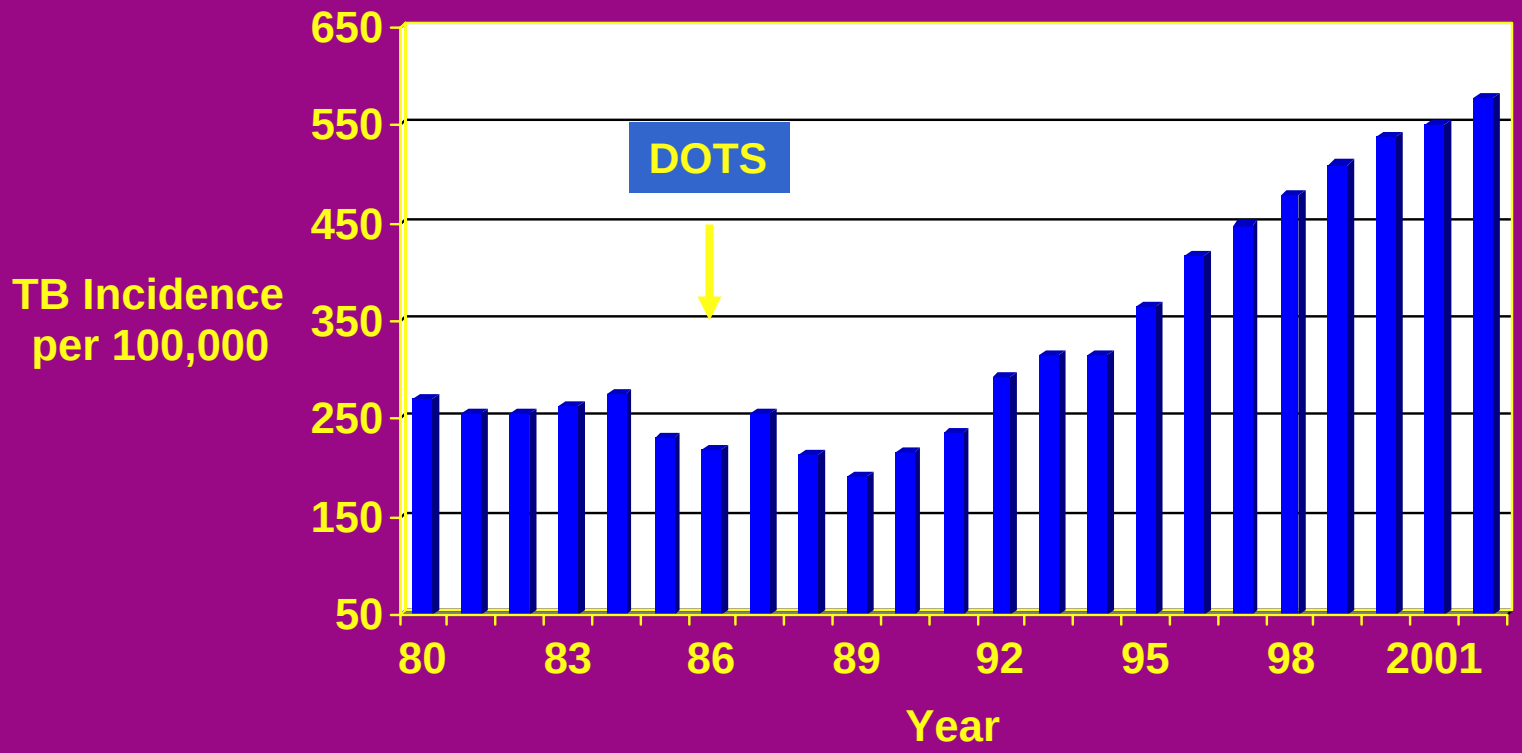
Groenewald et al AIDS 2005

Currently: Passive case finding

- Wait for symptoms to drive patient to attend health service.

- Health service must respond rapidly:
  DOTS
  - Diagnose TB accurately
  - Treat TB effectively/efficiently

TB in Botswana Pre- and Post- DOTS, Pre- and Post- HIV



Global Tuberculosis Control, WHO Report 2004

Screening

- Identification of people at high risk of serious, common diseases at an early stage using simple tests
- Benefit of early identification (prevent: mort/b, transmission)
- Definitive diagnosis: more complex confirmatory test

Screening for TB?

1. Serious problem
   - High incidence of active TB
   - High mortality amd morbidity (receive Rx too late)
   - Duration of symptoms (infectiousness)

2. Screening tests

3. Effective treatment

Methods of screening

Symptom screen

- Do you have a cough?
  (>2wks, productive, any)
- Are you losing weight?
- Do you have a fever?

Chest Xray

Sputum smear and/ or culture

Symptoms of TB in HIV+, TST+

Symptom	OR (95%CI)
Cough	1.74 (0.9-3.6)
Productive cough	**8.6 (3.7-20)**
Fever	**4.4 (1.4-13.7)**
Night sweats	**2.7 (1.2-5.7)**
Loss of weight	1.4 (0.7-2.9)
Shortness of breath	2.3 (0.9-5.7)

Martinson N Bangkok 2004

ACF at PMTCT VCT: Soweto

Symptoms	Odds Ratio	95% CI
Cough > 2 wks	3.3	0.7 – 14.9
Sputum production	**5.8**	**1.3 – 26.6**
Haemoptysis	**11.4**	**2 – 64.8**
Night sweats	3.8	0.7 – 20.1
Fever	**9.4**	**2.0 – 43.4**
Chest pain	3.5	0.7 – 18.9
Weight loss	**6.8**	**1.5 – 31.8**

Kali et al JAIDS in press

Active case finding HIV+, TST+

Basis for decision to start TB treatment	**n**
Smear positive	5
Smear negative culture positive	36
ADA pleural fluid	3
Histological diagnosis	2
Fine needle aspiration	3
Clinical findings	4
TOTAL	53

ACF HIV+ at VCT Cambodia

VCT	8 109
HIV+	1 228 (15%)
Screened for TB	450 (37%)
Active TB	107 (24%)

Vannarith C MMWR 2005

ACF at VCT in Haiti HIV+ and HIV-

	HIV+	**HIV-**
VCT	474	853
Cough	128 (27%)	113 (13%)
TB	50 (39%)	26 (23%)
Cult + TB	25 (50%)	17 (65%)

Burgess AL AIDS 2001

PMTCT VCT: Soweto Cont

- 120/370 participants had symptoms suggestive of TB.
- 8 patients had newly diagnosed active TB (2,160/100,000)
- All cases: smear negative, culture positive.
- Lay counsellors: 7 minutes : active TB
  4 minutes without TB

Table 2 Active case finding (ACF) for sputum positive tuberculosis by identification of chronic coughers >10 years old amongst the Agincourt sub-district permanent population

Total permanent population	56 566
Total permanent population >10 years	38 251
Permanent population >10 years (cough status known)	38 127
Chronic coughers identified	600 (1.6%)
Did not fit case definition of chronic cough	189 (31.5%)
On treatment for TB	22 (3.7%)
Not found by TB team	4 (0.7%)
Died before TB team arrived	1 (0.2%)
Other	18 (3.0%)
Confirmed chronic coughers	366
Sputum specimens collected	366 (100%)
Results available	340 (92.9%)
ACF cases	
Positive on smear and/or culture	6 (1.8%)
Ratio of chronic coughers:sputum positive TB cases	61:1

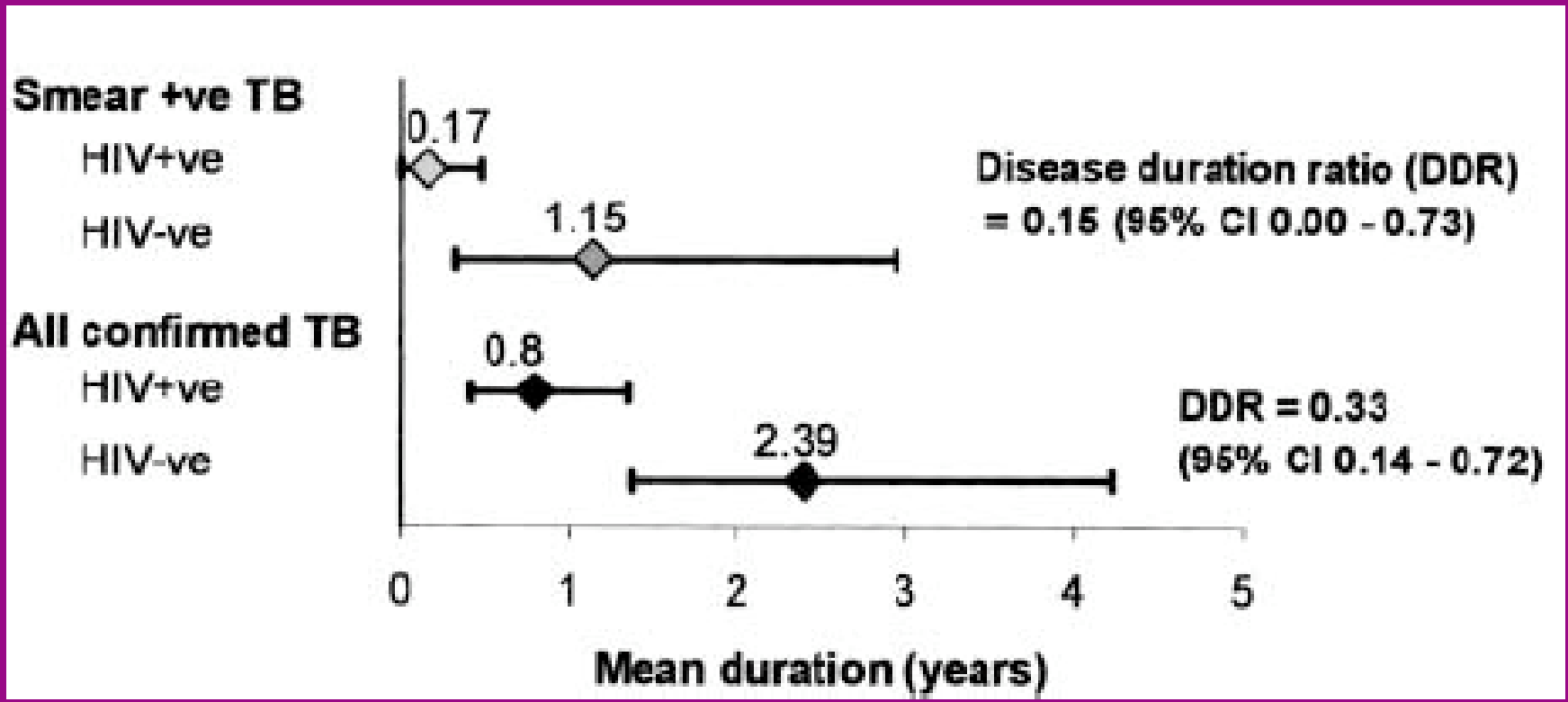
Pronyk P 2001 Int J TB Lung Dis

ACF Masiphumalele, CT

	Smear +	Cult +
	% Missed by Passive CF	
HIV +	36%	19%
HIV -	67%	5%
	Days prior to TB Treatment	
HIV +	0.7 yrs	1.3 yrs
HIV -	0.2 yrs	9 yrs

Bekker LG CROI 2006

Duration of infectiousness Free State miners



Corbett E. Am J Resp Care

Is there a benefit?

Treating earlier without severe symptoms

- Mortality?
- Morbidity?
- Transmission?

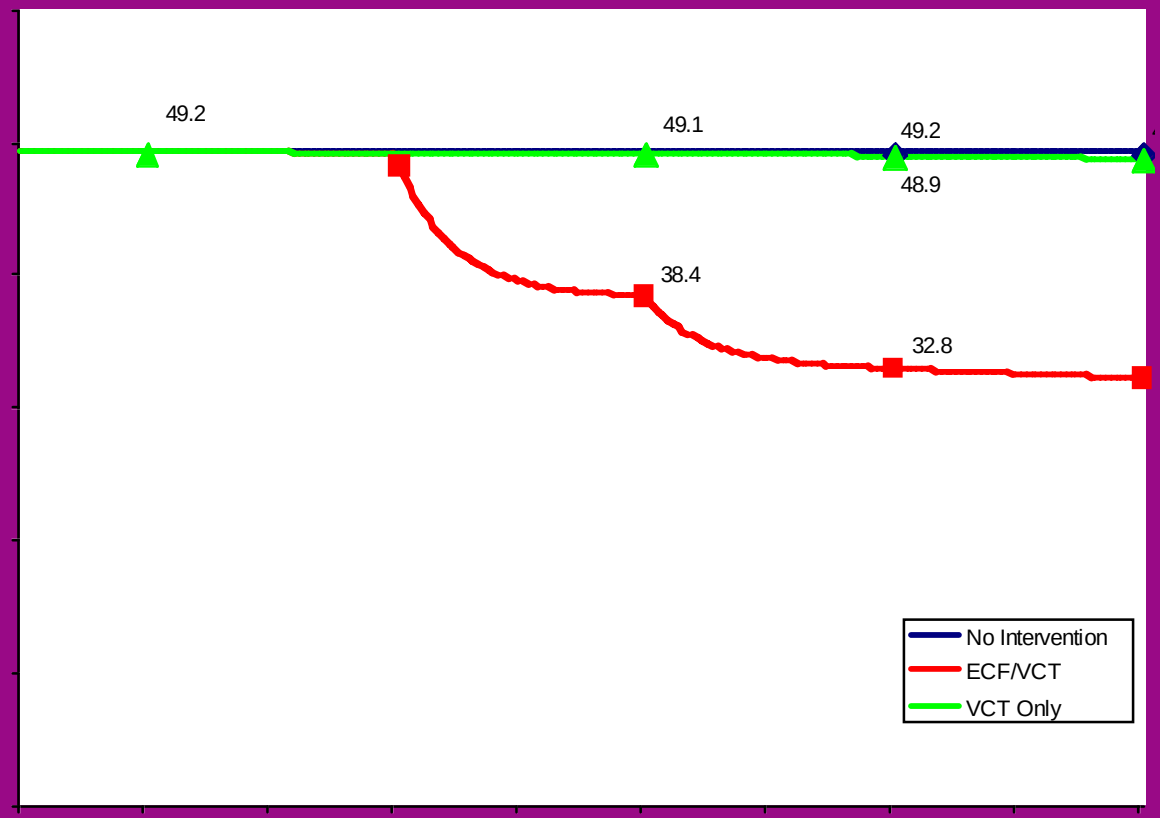
- NO EVIDENCE YET

Randomised trial: Chest X-Ray in miners

	Cases detected (%)	**2-month mortality (per 100 py)**
Annually	29	23
Semi annually	29	10

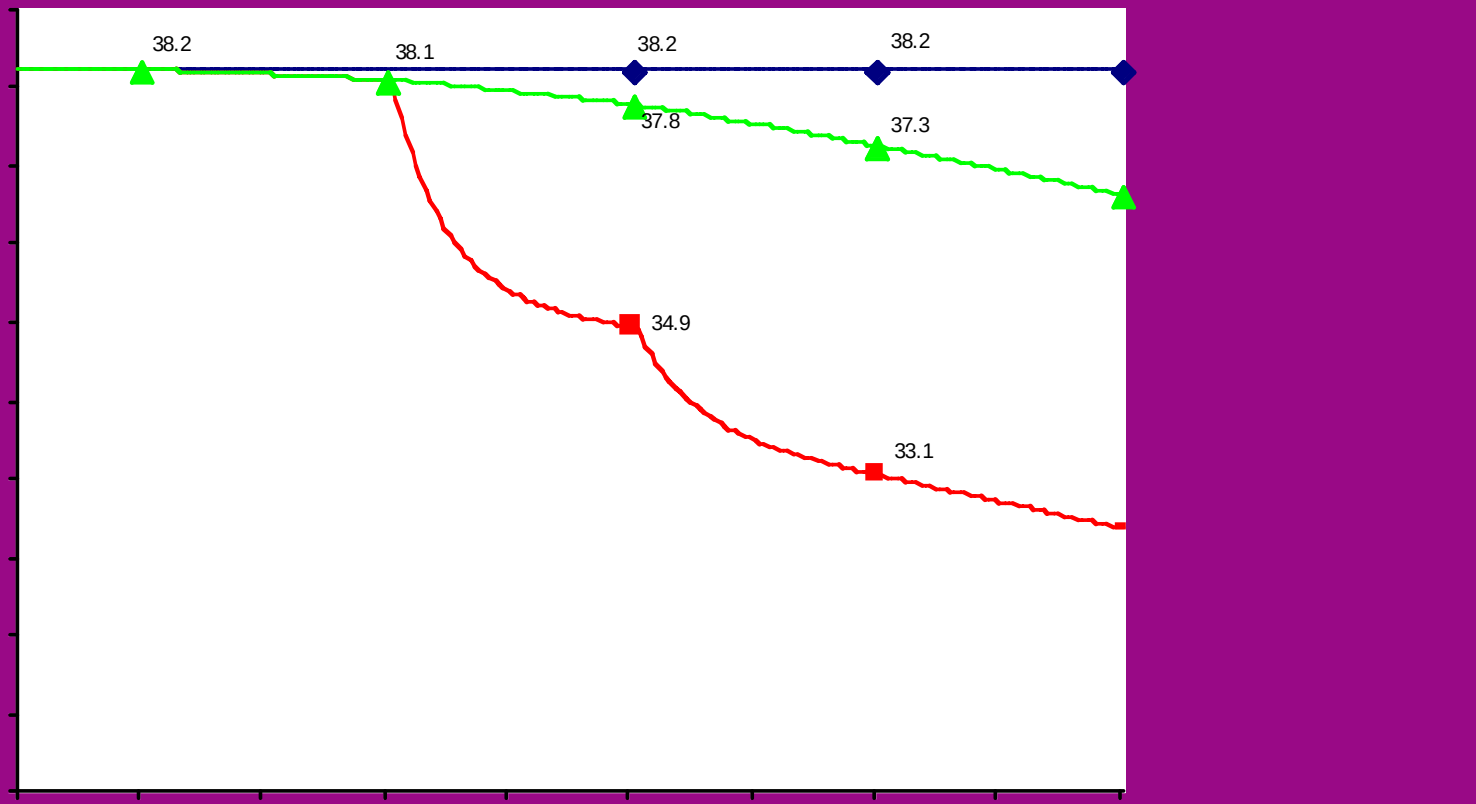
Roux S IUATLD Conf 2003

Modelling: Prevalence of TB after ACF with CBVCT

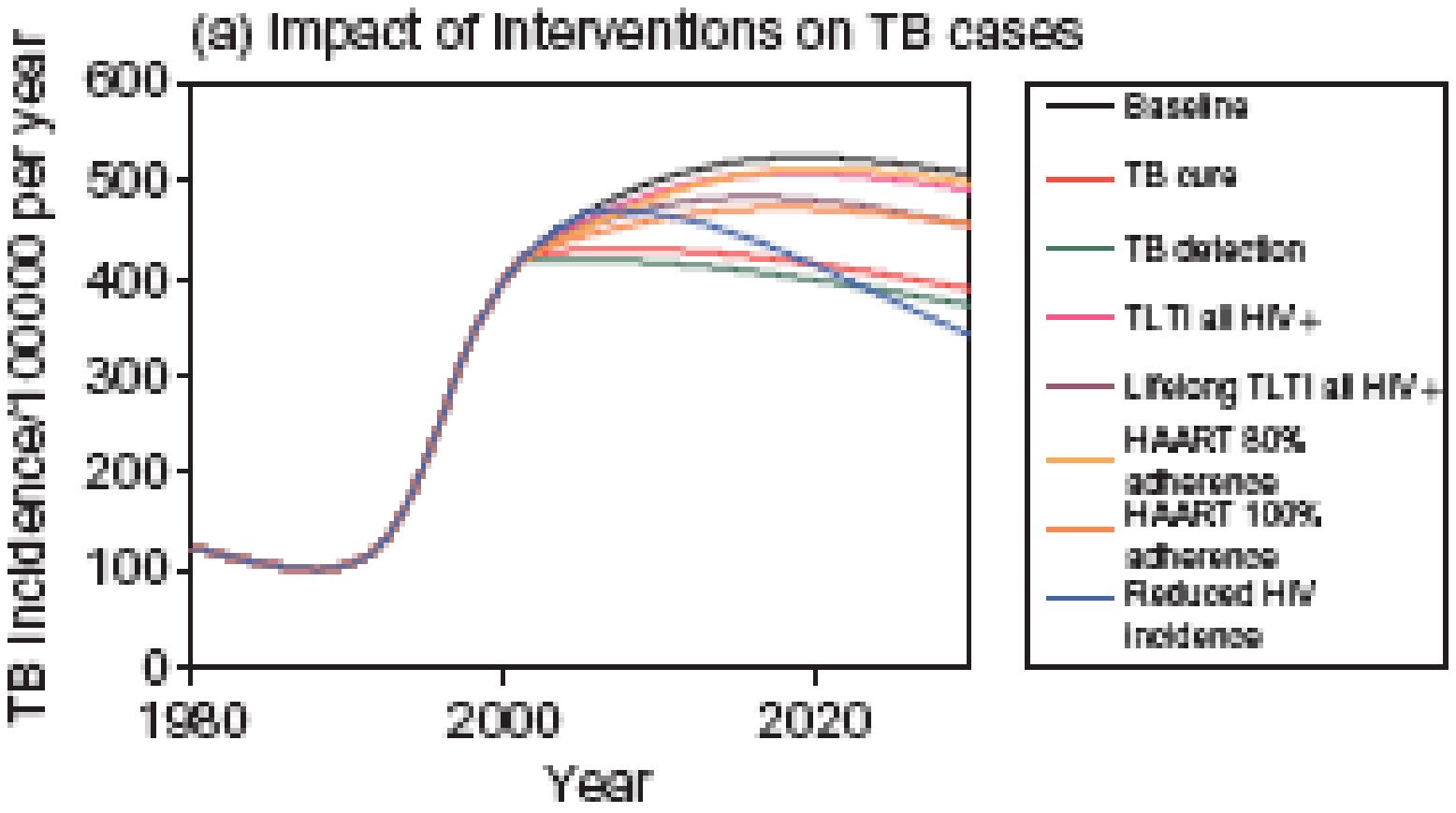


Dowdy 2005 unpublished

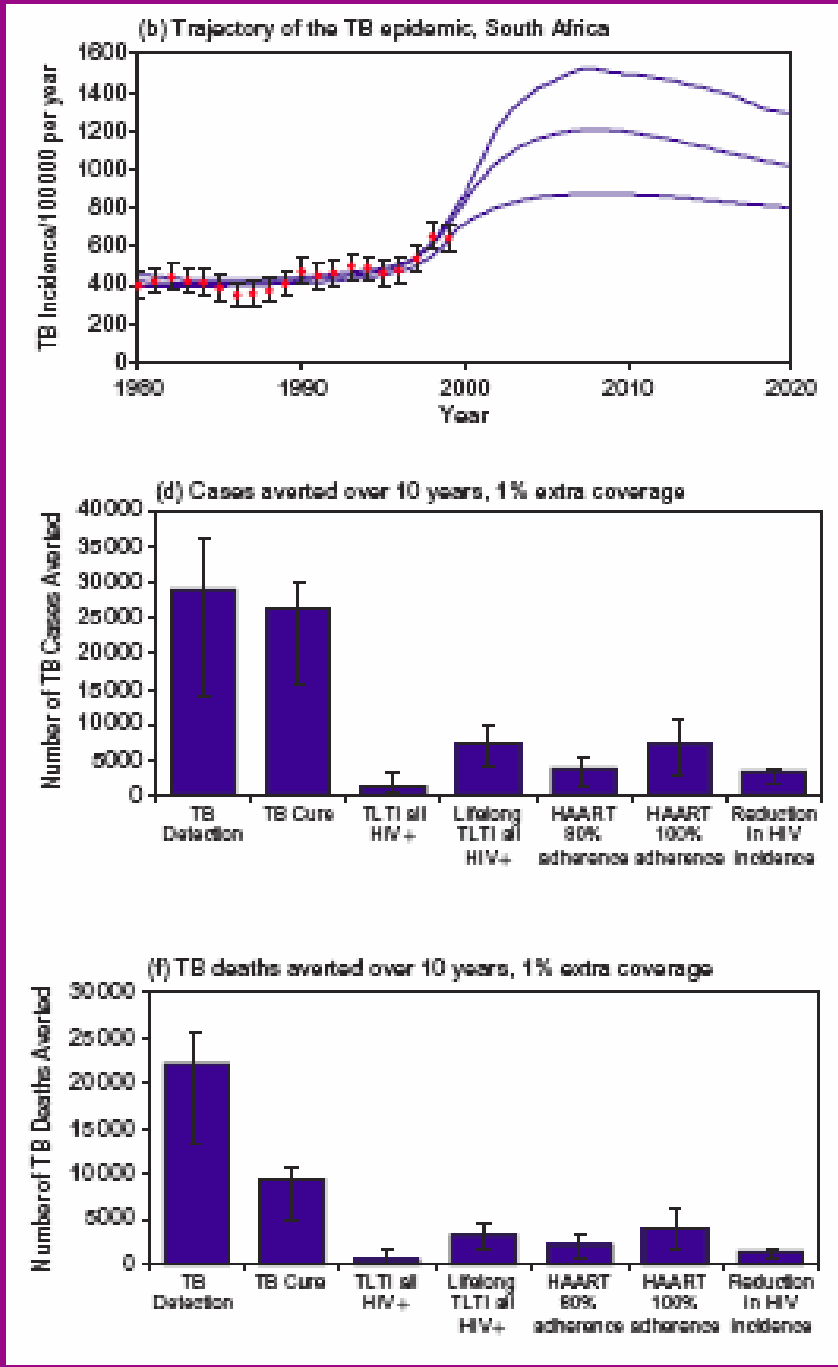
Modelling: Incidence of TB after ACF with CBVCT



Dowdy 2005 unpublished


(a) Impact of Interventions on TB cases
TB Incidence/100000 per year
600
500
400
300
200
100
0
1980
2000
2020
Year
Baseline
TB cure
TB detection
TLTI all HIV+
Lifelong TLTI all HIV+
HAART 80% adherence
HAART 100% adherence
Reduced HIV Incidence

Modelling: South Africa



Currie CSM 2003 AIDS

Modelling ACF: Sub-Saharan Africa

Strategy	Millions prevented	
	Cases	Deaths
DOTS in Sm neg	0.3	0.4
ACF Symptoms	5.6	2.7
ACF Symptoms 7 years	12.9	5.9
ACF Mini X-ray 7 years	20.5	9.9

Murray CL 1998 Proc Natl Acad Sc

Active case finding: Other issues

- Latent infection
- Preventive treatment
- Diagnostic algorithms
- Cost effectiveness
- Targeting high risk groups
- Long term benefits
- Children

INT J TUBERC LUNG DIS 9(11):1183–1203

REVIEW ARTICLE

Active case finding of tuberculosis: historical perspective and future prospects

J. E. Golub,*† C. I. Mohan,*† G. W. Comstock,† R. E. Chaisson*†

Summary

1. High HIV prevalence settings have high rates TB in HIV+ and HIV-
2. Feasible for HIV+
3. ACF at every consultation for HIV+. Symptom screen followed by culture
4. Modelled benefits of population ACF
5. Unknowns
    1. Added burden on TBCP (labs, personnel etc),
    2. Treatment completion rates
    3. ? LONG TERM INCIDENCE BENEFIT